

ECE 538

Advanced Computer Architecture

Instructor: Lei Yang

Department of Electrical and Computer Engineering

ABOUT THE INSTRUCTOR AND TEACHING ASSISTANT

- Instructor: Dr. Lei Yang
 - Office: 134B ECE Building
 - E-mail: leiyang@unm.edu
 - Phone: (949) 302-7908
- TA: Daniel Manu
 - E-mail: dmanu@unm.edu
- I encourage you to ask **Questions** and give me **Feedback**!



- ❖ TA is expert and ready to help.
- ❖ If you are unhappy with something, please let me know.

CLASS



- ❑ Class Room: Electrical & Comp Engineering 237 (EECE 237)
- ❑ Class Time: Monday & Wednesday 2:00-3:15 PM

Aug 23, 2021 – Dec 18, 2021

- ❑ Office Hour: Wednesday 1:00-2:00 PM
 - OR anytime you see me (my door will be open!)
 - OR Email
- ❑ Contact Information: leiyang@unm.edu
(949)302-7908 (TEXT OR CALL in emergency)

- Course Webpage: learn.unm.edu
- Course Topics:
 - Performance, power, and energy constraints
 - Memory hierarchy and caches
 - Multiprocessors and Parallelism
 - Exception and Interrupt
 - Custom and Emerging Computer Architectures

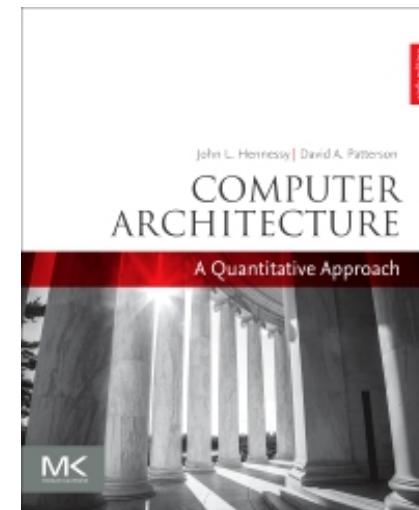
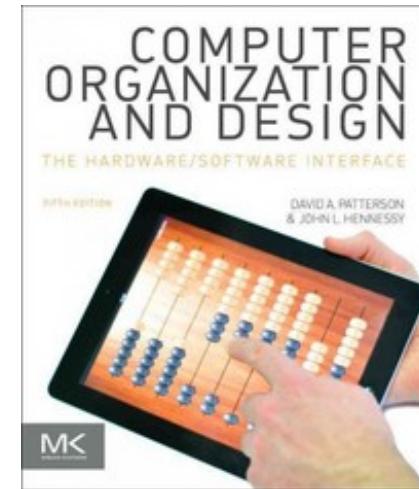
□ Grading Policy

Homework	30%	<i>3 - 4 homeworks</i>
Midterm Exam	25%	
Quizzes	10%	
Project / Final Exam	35%	

RESOURCES

□ Text Book:

- *David A. Patterson & John L. Hennessy, Computer Organization and Design MIPS Edition: The Hardware/Software Interface , 5th Edition, The Morgan Kaufmann Series in Computer Architecture and Design, 2019.*
- *John L. Hennessy & David A. Patterson, Computer Architecture: A Quantitative Approach, 6th Edition, The Morgan Kaufmann Series in Computer Architecture and Design, 2019.*



RESOURCES

□ Software:

- A couple pieces of software that can be installed on your PC or laptop at home.
- The software is the same as used in industry by people who make a living designing chips.
- Tutorials are for you to understand how to install and use the tools.



RESOURCES

□ Software:

- David Patterson & John Hennessy, Computer Organization and Design: The Hardware/Software Interface, 5th Edition, Morgan Kaufmann, 2014.
- Volnei Pedroni, Circuit Design with VHDL, The MIT Press, 2004.
- Neil Weste & David Harris, CMOS VLSI Design: A Circuits and Systems Perspective, 4th Edition, Addison-Wesley, 2011.
- Dominic Sweetman, See MIPS Run: Linux, 2nd Edition, Morgan Kaufmann, 2007.

TESTS AND EXAMS

- Tests/Exams are close-book.
 - Students are responsible for providing their own books and notes and may not share with other students.
 - There will be review to help you preparing for test/exam ahead of test/exam.
- If you must miss a test/exam due to circumstances beyond your control, you must notify Dr. Yang as early as possible (prior to the test/exam) so that arrangements might be made.
- Homework/Exam should be completed independently
- Make-up exams will not in general be administered.

ACADEMIC INTEGRITY

- Please consult Academic Integrity website:
<https://grad.unm.edu/aire/academic-integrity.html>
- Academic misconduct will result in a failing class for this class.
 -  Please ask for help and do not cheat!
 -  We are here to help you and I will go above and beyond to help you.
 -  I am also here to help if you just need to talk.
- You can also read books on taking classes effectively!
- Academic Affairs office: advising, tutoring, and self-help
<https://hsc.unm.edu/academicaffairs/>



A LITTLE BIT

ABOUT

me...

Sichuan's Location in China Map

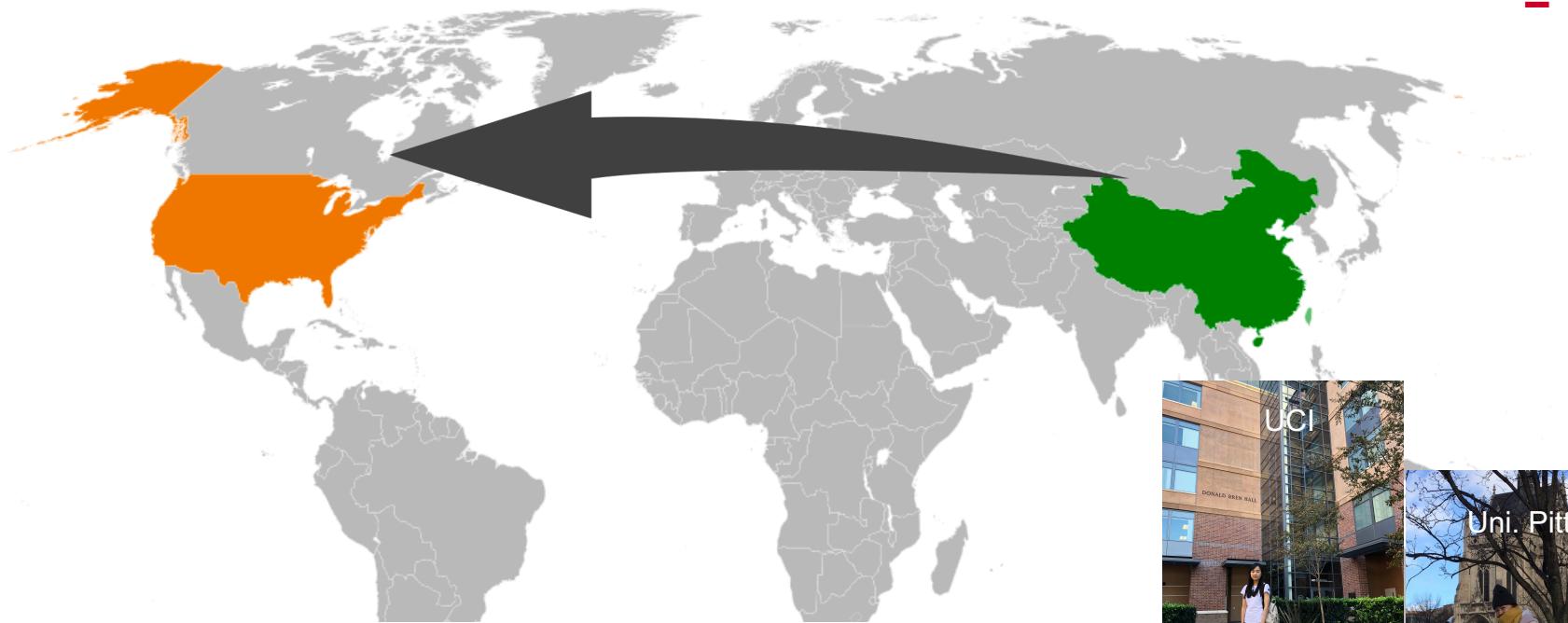


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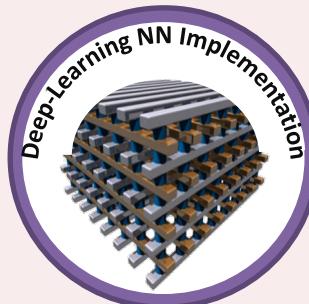
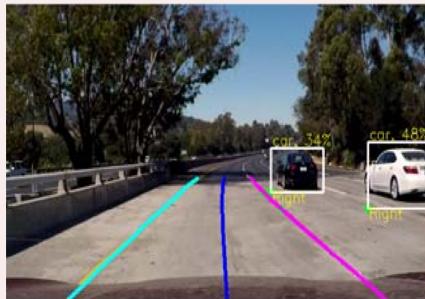


- Oct. 2017 to Feb. 2019, University of California, Irvine, CA, USA.
- Feb. 2019 to Aug. 2019, University of Pittsburgh, PA, USA.
- Aug. 2019 to Oct. 2020, George Washington University, DC, USA.
- Oct. 2019 to Aug. 2020, University of Notre Dame, IN, USA.
- **UNM, to be continued...**

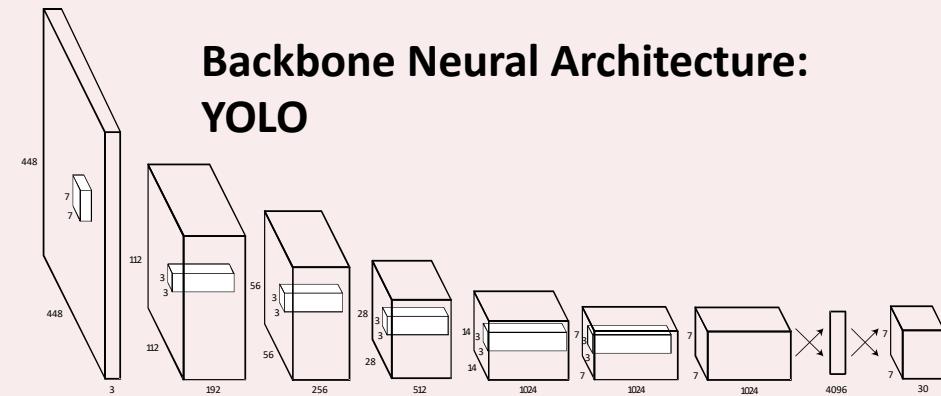


RESEARCH: CO-EXPLORATION OF NN AND HW DESIGN FOR AI APPLICATIONS

Line Detection in Autonomous Car



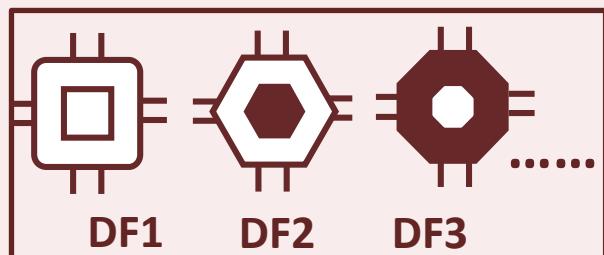
Backbone Neural Architecture: YOLO



Neural Architecture Search Space

HW/SW Co-Exploration

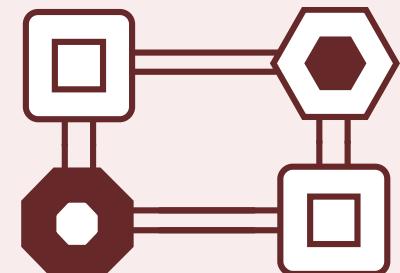
Hardware Design Space



Template Pool



Design





TELL US YOUR
STORY

LET'S GET STARTED

